Summary of the 2010 and 2015 Case Studies

June 11, 1999

1. Introduction

The SFWMD modeling team in a coordinated effort with members of the Restudy Evaluation Team have modeled and evaluated specific moments-in-time that reflect what the Regional system might potentially look like and how it might operate at that point in Restudy implementation. The specific points-in-time (case studies) that were modeled are 2010 and 2015. These representative model runs and performance measures are the result of many iterative simulations based on the Comprehensive Plan as depicted in the April 1999 Implementation Plan Schedule. The purpose of this effort was to optimize the potential interim performance reflected by the implementation of the Comprehensive Plan features that are scheduled to be fully implemented by 2010 and 2015 respectively.

This summary helps to provide an overview and evaluation of the simulation results for the 2010 and 2015 Case Studies (2010CS-2015CS). The following agencies and organizations contributed to this summary: SFWMD, USACE, ENP, FGFWFC, FDACS, FWS, and NAS. This summary is intended to assist in the understanding of the model results and team evaluation of results. A full set of performance measures for the 2010CS and 2015CS are posted together on this web site to view and evaluate.

2. Background

The 2010 case study represents approximately ten to twelve years of implementation. Meaning approximately 1/2 of the Restudy is represented as implemented and operational by the 2010-2012 time-period. The 2015CS represents five additional years of implemented projects. Components that are contained in the 2010CS and 2015CS are depicted in the Component Table (at end of this document).

In addition to the actual fully implemented components operational modification were made to help optimize regional performance during these interim implementation periods. Lake Okeechobee Regulation Schedule was modified to reflect forecasting similar to the currently proposed Lake Okeechobee WSE schedule.

3. Simulation Results

The results of selected performance measures provide a summary of the performance of the 2010 and 2015 model simulations. The SFWMMv3.5 simulations shown on the performance measure graphics that are posted on the web site entitled Interim Evaluations are labeled as follows:
NSM45 = Pre-drainage System Simulation (Natural System Model v4.5)
95BSR = 1995 Base Condition (current condition) Simulation
50BSR = 2050 Base Condition (future without project) Simulation
D13R = Alternative D13R (Recommended Comprehensive Plan)
2010CS = Revised 2010 Case Study Simulation
2015CS = 2015 Case Study Simulation

System-wide flow

- Flow patterns are essentially the same for the 2010CS and the 2015CS simulations. 2015CS flow patterns are slightly increased. They both show a significant improvement in the overland flow pattern compared to the current system (1995 base). It is clear that the 2015CS markedly improves (becomes more NSM-like) the overland flow pattern relative to the 1995 base, especially in NESRS.

- 2015CS has similar flow patterns to D13R, particularly in NESRS - although the magnitudes of the flows are clearly larger. The exception is in the connection between WCA-3A, WCA-3B and NESRS. The 2015CS introduces flows from 3A to 3B further north, and with smaller magnitude, than D13R. This results in less flow passing from WCA-3B to NESRS, but a more NSM-like flow pattern than D13R.

Lake Okeechobee

- The 2015CS shows significant increase in flows from Lake Okeechobee to the WCAs. Three components of flow are of relevance: (1) lake regulatory discharges through the EAA storage 'surge tank' (compartment 2A); (2) lake regulatory discharges around the EAA 'surge tank'; and (3) lake releases triggered by low water depths (relative to targets) in the WCAs. The total of these 3 components was 529,000 ac-ft/yr for D13R and 553,000 ac-ft/yr for the 2010CS simulation and 614,000 ac-ft/yr for 2015CS, which represents a 16% increase above D13R and a 11% increase above 2010CS.

- It is likely that further operational refinement could further improve AltD13R although Lake Okeechobee ASR will offset some of the increased flow in order to store it for future release when needed (helping to meet the timing and duration needs of the system).

- By 2010, there are improvements in the lake's hydrologic performance measures. However, these improvements are restricted to high stage events (fewer than the 95Base). This improvement comes at the expense of an increased number of low stage events. 2010CS does not achieve the significant and balanced (reduced high and low stages) benefits that the Lake is expected to display upon completion of the proposed plan D13R.

- By 2015, substantial benefits are observed both in terms of fewer high stage events, fewer lows, and an increased number of desirable spring recession events. Another words the lake is approaching the balanced hydrologic restoration expected at the completion of Plan D13R.

Lake Okeechobee Service Area

- The 2010CS pattern of water shortages has changed. There are more months and years of water shortages, but the demands-not-met are smaller in volume and in percentage terms. In a number of cases the years when the shortages occur is different between the 1995 base and 2010CS runs. When evaluated from the perspective of years and months of shortages 2010CS performs worse than the 1995 base.

- Volumes and percentages of demands not met are lower and there are reductions in demands not met during the worst shortage years (the ones most likely to cause significant economic losses), thus the performance looks somewhat better.

- Trying to balance these two perspectives, the overall assessment is that the water supply performance for LOSA under 2010CS is about the same as 1995 base.

- By contrast, from all perspectives, the performance of the 2015CS is significantly improved over the 1995 base run and the 2010CS. The 2015CS still does not achieve D13R performance, reflecting the need to implement the rest of the Restudy components.

Caloosahatchee and St. Lucie Estuaries

- The 2015CS performance in the estuaries was improved relative to 2010CS and moved towards the performance of D13R as a result of moving more Lake water south through the EAA reservoir 'surge tank'. For the Caloosahatchee Estuary salinity envelope criteria, the number of additional months flows exceeded 2,800 cfs due to Lake regulatory discharges was 4 in the 2010CS and 2015CS and 1 in D13R. For the St. Lucie Estuary, the number of additional exceedences of the high flow criteria due to Lake regulatory discharges was 4 compared to 9 in the 2010CS and 2 in D13R.

- For the St. Lucie Estuary 2010CS and 2015CS show considerable improvement over the 1995 base and the 2050 base towards the targets and D13R. 2015CS performance is within a couple of exceedences of D13R. Both 2010CS and 2015CS are significant improvements over the 1995 and 2050 bases.

- For the Caloosahatchee Estuary the 2010CS shows progress toward D13R performance. 2015CS performance exceeds the targets for the Caloosahatchee Estuary. Both 2010CS and 2015CS are significantly improved over the 1995 and 2050 bases.

- For Lake Worth Lagoon 2010CS and 2015CS show considerable improvement above 1995 and 2015 base toward D13R.

Water Conservation Areas and Other Northern and Central Everglades

- In the 2010CS, WCA-3A experiences substantial improvements to both extreme low water conditions in the north and extreme high water conditions in the south when compared to the 1995 Base. When compared to the 2050 Base these improvements to low water conditions are small and improvements to high water conditions are negligible.

- In the 2010CS, WCA-3B shows increases in the severity of both extreme high and low water in the south, and increased depths and durations of high water in the north when compared to 1995 Base. When compared to the 2050 Base there are slight improvements to high water in the southeast, but increased high water and decreased low water in the north. Generally, for 2010CS water flows though WCA-3B in a more natural direction than D13R. This appears

to occur at the expense of performance in the northern part of the WCA, where large inflows from the S-151 structure exacerbate extreme high water conditions.

- Elsewhere in the northern and central Everglades, Loxahatchee National Wildlife Refuge, Holey Land Wildlife Management Area, and Rotenberger Wildlife Management Area, 2010CS shows improved performance similar to D13R performance. WCA-2A, WCA-2B, and northeast WCA-3A also perform similarly to D13R, exhibiting the same mix of improvements and limitations already described in the AET evaluation of D13R.

- The frequency of extreme high or low water conditions does not differ by more than 1% between the 2015CS and 2010CS in any of the indicator regions. South of Alligator Alley in WCA-3A, WCA-3B, and Shark Slough, there is a trend toward slightly decreased frequencies of extreme low water conditions.

- For 2015CS mean hydroperiods do not differ by more than 2% from the 2010CS in any indicator region. A trend toward longer hydroperiods is evident in the southern part of the peat landscape, where there is a 1-2% increase in hydroperiod in every indicator region that lies south of Alligator Alley (southern WCA-3A, WCA-3B, Shark Slough, and the Pennsuco wetlands). By 2015 hydroperiods remain shorter than D13R values in Shark Slough, southern WCA-3B, and Pennsuco, but are similar to D13R everywhere else with the exception of northeastern WCA-3B (IR 67), which has a 4% increase in hydroperiod relative to D13R.

- For extreme high water, the 2015CS performs better than D13R in eastern WCA-3A, but worse in WCA-3B, southern WCA-3A, and the Pennsuco wetlands. Of these areas, eastern and southern WCA-3A are improved relative to the 1995 and 2050 Base Cases. WCA-3B and Pennsuco have more high water than under base conditions.

<u>Pennsuco Wetlands Area</u>

- The 2010CS and 2015CS for Indicator Regions 52 & 53 both showed improvement when compared to 1995 and 2050 Bases for frequencies, average duration, and average annual duration of hydroperiods. 2010CS and 2015CS hydroperiod characteristic values are similar to D13R and NSM4.5 values.

- Average annual hydroperiod for 2015CS was the same as 2010CS in Indicator Region 52. In Indicator Region 53, the average annual hydroperiod increased from 85% each year in 2010CS to 87% each year in 2015CS, showing some improvement.

- The 2010CS and 2015CS low water event frequencies, average duration, and average annual duration for Indicator Regions 52 and 53 decreased compared to the 1995 and 2050 Bases. Low water event characteristic values for both 2010CS and 2015Cs are slightly greater than, but within 4% of D13R and NSM4.5 values.

- Compared to 2010CS, 2015CS showed one fewer low-water event in Indicator Regions 52 and two fewer low-water events in Indicator Region 53. No difference was observed in the

average duration and average annual duration of low water events for 2015CS when compared to 2010CS.

- The 2010CS high water event frequencies, average duration, and average annual duration for Indicator Region 52 and 53 are greater when compared to the 1995 and 2050 Bases and D13R. However, high water event characteristic values remain below NSM4.5 values.

- The high water event frequency, average duration, and average annual duration for Indicator Region 52 changed from 15 six-week events (6% of the year) in 2010CS to 19 four-week events (5% of the year) in 2015CS. The high water event frequency, average duration, and average annual duration for Indicator Region 53 changed from 10 eight-week events (5% of the year) in 2010CS to nine seven-week events (4% of the year) in 2015CS.

Model Lands southern Glades and C-111 Basin

- The Model Lands north receive benefits from both 2010CS and 2015CS modeling during the dry season. The 2010CS improves conditions and 2015CS improves them enen more with groundwater remaining higher in the dry season than under 1995 base and 2050 base, however these levels are still less than Alternative D13R.

Everglades National Park (ENP)

- The 2015CS increased the total net inflow delivered to ENP (expressed as a % of NSM45) from 53% -1995Base and 77%-2010CS to 81%. This is greater than D13R net inflows which are 80% of NSM45.

- The 2010CS and 2015CS show a series of improvements to the ecosystem and to Everglades National Park when compared to the 1995 Base and the 2050 Base.

- 2010CS and 2015CS show vast improvements to the southern Everglades which are directly linked to improved utilization / operations of Lake Okeechobee and the Everglades Agricultural Area (EAA) reservoir. Flows to the EAA reservoir are increased to 289,000 acre feet in 2010CS and 351,000 acre feet in 2015CS. More water was moved into the regional Everglades systems beginning in the Water Conservation Areas. Moving more water south into this area allowed water to flow more naturally into the southern Everglades and associated southern estuaries.

- Flows to Shark River Slough (SRS), shown as a % of NSM45, increased from 43% -1995 Base and 69% -2010CS to 72% in the 2015CS. SRS deliveries in D13R were 74% of NSM45. Thus, 2010CS achieves 84% and 2015CS achieves 94%, of the total increase expected by full implementation of Alternative D13R.

- Increasing flows to the WCAs and distributing more flow into WCA 3B improved the patterns of flow into the historic headwaters of Northeast Shark River Slough. This provides a significant early benefit to the southern Everglades.

- 2015CS flows to ENP via Northeast Shark River Slough (NESRS) were increased by 28,000 ac-ft/yr (5%) compared to 2010CS. The 2015CS flows to NESRS are 100,000 ac-ft/yr (14%) less than D13R.

- The spatial distribution of the total SRS flow delivered to NESRS was 54% of the total SRS flow (574,000 of the total 1,057,000 ac-ft/yr) for the 2010CS, 55% of the total SRS flow (602,000 of the total 1,099,000 ac-ft/yr) for the 2015CS and 62% of the total SRS flow (702,000 of the 1,131,000 ac-ft/yr) under D13R. Note that the current system (1995 Base) delivers only 9% of the total SRS flow (62,000 of the 662,000 ac-ft/yr) to NESRS; and NSMv4.5 shows 67% of the total SRS flow (1,030,000 of the 1,534,000 ac-ft/yr) to NESRS. This showed a significant improvement in the southern Everglades early in the restoration process when compared to the base conditions.

- Re-distribution of water to Northeast Shark Slough provided improved hydroperiod for this area. Increased flow to the southern Everglades also significantly improved hydroperiod in the Rockland Marl Marsh as well.

- Distributing water from Western Shark River Slough to NESRS and re-distributing water more naturally from WCA-3B into this area improves the restoration of the historic Slough earlier in the process.

- Increased water to the southern Everglades is expected to improve salinity conditions in Florida Bay, although specific salinity/water level relationships are still in the process of being refined.

- Hydroperiod matches for ENP increased from 75% in the 2010CS to 83% in the 2015CS as compared to 95% in D13R. Water depths and hydroperiods in NESRS (IR-11) also increased slightly from the 2010CS to the 2015CS. 2015CS hydroperiods increased about 1% over the 2010CS, and water depths increased by about 0.1 feet. The additional improvement D13R reflects when compared to 2015CS is about a 7% increase in hydroperiod and about 0.5 feet increase in water depths in the dry season.

<u>Biscayne Bay</u>

- Inflow to Biscayne Bay under the 2015CS increased by 6,000 ac-ft/yr relative to the 2010CS, making the total inflow to Biscayne Bay 24,000 ac-ft more than that from Alternative D13R. The increase in inflow to Biscayne Bay in 2015CS was to Central Bay making Central Bay flows closer to the target. Note both the 2015CS and 2010CS do not implement the wastewater reuse component.

- The 2010CS showed impacts in flows to Biscayne Bay resulting from the seepage management components. Snake Creek and Central Bay portions of Biscayne Bay fail to meet 2050 base conditions.

- Biscayne Bay has the same annual total flow to Snake Creek as is called for under the target flow but the majority of this water is delivered in the wet season while the target is 50,000 acre feet short for the dry season. The flow for this area is slightly less than the 1995 base,

the same as the 2050 base, and more than D13R. It is still severely short in the dry season when compared to the dry season target.

- North Biscayne Bay remains the same under all alternatives, all bases and 2010CS and 2015CS modeling.

- The Miami River has no established targets. D13R reduces 60 percent of the freshwater flow to this area. Both 2010CS and 2015CS modeling represent removal of 55% of freshwater from the Miami River.

- Central Biscayne Bay in Biscayne National Park has less flow under both 2010CS and 2015CS than the 1995 base, the 2050 base and Alternative D13R. This area remains critical for both runs and still needs improvement. The 2015CS shows slight improvement over the 2010CS. In 2010 central Biscayne Bay in Biscayne National Park receives 35,000 acre feet less than target flow in the wet season and 33,000 acre feet less than target flows in the dry season. In 2015 this situation is slightly improved with a 26,000 acre foot shortfall in the wet season and a 30,000 acre foot shortfall in the dry season.

- Flow to South Biscayne Bay and Biscayne National Park is better under both 2010CS and 2015Cs modeling than the 1995 and 2050 base cases. Flow is high enough in the dry season to provide benefits from overland redistribution of water. Flow is less than D13R. (Biscayne Bay targets will be and need to be developed as part of the Project Implementation report process).

<u>Lower East Coast Service Areas</u>

- 2010CS performs slightly better than the 1995 Base and much better than the 2050 Base for all four performance measures evaluated - provide 1-in-10 year level of service, minimize the number of months of water supply cutbacks, maintain primary coastal canal stages, and maintain canal stages in South Miami-Dade County.

- 2010CS does not perform as well as D13R for the 1-in-10 year level of service and the number of months of water supply cutbacks. The frequency doubles or triples and the durations of cutbacks increase approximately two and a half times for all the LEC Service Areas.

- The 2010CS shows the ability to maintain deliveries to the primary coastal canals and to South Miami-Dade canal system, unlike the 2050 Base. D13R and 2010CS perform similarly for maintenance of the primary coastal canal stages and maintenance of canal stages in South Miami-Dade County.

- The frequency of water supply restrictions and the total duration of the restrictions are slightly reduced for 2010CS when compared to the 1995 and 2050 Bases. LEC Service Area 3's frequency and duration of water supply cutbacks actually increases slightly in 2010CS compared to the 1995 Base. When 2010CS is compared to the 2050 Base, the frequency of restrictions are reduced by more than half for LEC Service Area 1 and 2 and North Palm Beach. LEC Service Area 3's frequency of restrictions is reduced in the 2010CS by one-third

when compared to 2050 Base. The frequency of restrictions and the number of months of restrictions in 2010CS are much greater for all of the LEC Service Areas than for D13R.

- The number of months of locally-triggered Phase I water restrictions was similar in the 2010CS, the 2015CS and D13R. The number of lake-triggered water restriction months decreased by five from the 2010CS to the 2015CS, and the number of months of restrictions triggered by the dry season criteria decreased by about five months. All LECSA's performed better than the 1995 base. The performance in the LEC Service Areas are further improved under D13R.

4. Summary

The 2015 Case Study shows overall improved performance over the 2010 Case Study but does not yet achieve the performance of D13R. More water was released from Lake Okeechobee toward the Everglades in both the 2010CS (24,000 ac-ft more) and 2015CS (85,000 ac-ft more) than under D13R. The Everglades operations were modified to distribute the flows as optimally as possible to provide maximum benefit to the WCAs, ENP and Biscayne Bay. In the 2010CS and 2015CS, more water was passed from WCA-3A to WCA-3B and the flow patterns were improved relative to the 1995 Base and D13R. This resulted in a small increase in the percent of time that water depths exceeded 2.5 feet in northern WCA-3B relative to D13R. The 3A-3B-NESRS conveyance issue continues to show key tradeoffs in balancing overall performance of WCA-3B, ENP, and Biscayne Bay.

The increased flow from Lake Okeechobee to the Glades also improved the performance for the Caloosahatchee and St. Lucie Estuaries. Water supply performance in the 2015CS was improved for the Lake Okeechobee Service Area and the Lower East Coast Service Areas relative to the 1995 Base. In the 2010CS the number of years with large cutbacks increased relative to the 95Base for the Lake Okeechobee Service Area.

The overall performance improvement in the 2010CS and the 2015 CS was primarily due to the addition of new components, but was also due to modifications to the operation of the proposed components, particularly the Lake Okeechobee regulation schedule (Fig. 1), the EAA reservoir 'surge tank', and the fine-tuning of the Everglades operations.

Overall performance improvements for the 2015CS occurred for all of the reasons mentioned for 2010Cs plus the fact that a lot of storage components are fully implemented by 2015.

It is expected that additional improvements to the simulated performance of D13R can also be realized by further adjustments to the operations. However it is recommended that this effort be performed as part of the C&SF Restudy RECOVER process each time a major component undergoes it's next level of feasibility design.

ID	COMPONENT NAME	2010	2015*
	PILOT PROJECTS		
Pilot	Lake O ASR Pilot	X	
Pilot	Caloosahatchee ASR Pilot	X	
Pilot	Levee Seepage Mgmt Pilot	X	
Pilot	Site 1 ASR Pilot	X	
Pilot	Lakebelt Technology Pilot	X	
Pilot	Reuse Pilot	X	
DD	Holey Land Regulation Schedule	X	
EE	Rotenberger Regulation Schedule	X	
KK	WCA-1 Internal Structures	X	
OO	C-111 Operational Modifications	X	
WW	C-111 N Spreader	X	
T	C-4 Divide Structure	X	
II	G404	X	
	INDIAN RIVER LAGOON		
B	C-44 Basin Storage Reservoir	X	
UUp1	C-23,C-24,	X	
UUp2	C-25, N&S-Fork Reservoir	X	
	EVERGLADES AGRICULTURE AREA		
G p1	EAA Reservoirs Phase 1	X	
G p2	EAA Reservoir Phase 2		X
	LAKE OKEECHOBEE HEADWATERS STORAGE		
W	Taylor Creek Nubbin Slough	X	
A	North of LO Storage		X
	CALOOSAHATCHEE RIVER BASIN		
D	C-43 Basin Storage & ASR	X stor. Partial ASR	X
DDD	Caloosa. Backpumping w/STA		X
	WATER PRESERVE AREA COMPONENTS		
R	C-9 STA	X	
Q	West C-11 Diver. & Impound.	X	
BB	Dade/Brow Levee/Pennucco	X	
Mp1	Site 1 Impoundment	X	
Mp2	Site 1 ASR		X
OPE	ACME Basin B Discharge	X	
OPE	Protect wetlands (Strazulla)	X	
OPE	Pal-Mar/Corbett Hydro Rest.	X	
X	C-17 Backpumping & Treatment	X	
Y	C-51 Backpumping & Treatment	X	
U	Bird Drive Recharge Area		X
	LEVEE SEEPAGE MGMT		

ID	COMPONENT NAME	2010	2015*
V	L31 N Levee Improvements	X	
O	WCA-3A &3B Seepage Mgmt	X	
FF	S356 Structures	X	
	STORAGE WITH ASR COMPONENTS		
K	L-8 Basin		X
GGG	C-51 & southern L-8 Reservoir		X
LL	C-51 Region. Groundwater ASR		X
VV	Ag. Reserve Reservoir & ASR		X
	LAKEBELT STORAGE & CONVEYANCE		
S p1	Central Lakebelt Storage Area		
S p2	Central Lakebelt Storage Area		
EEE	WCA-3B Flows to Central LB		X
ZZ	WCA-3A & 3B flows to CLB	X	
YY	WCA 2 flows to CLB storage	X	
XXp1	North Lakebelt Storage Area		
XXp2	North Lakebelt Storage Area		
	WCA CONNECTIVITY		
SS	Reroute Miami-Dade Water Supply Deliv	X	
AA	Add'l S-345 Structures (L67 A)	X	
QQp1	WCA-3 Decomp. & Sheetflow Enhance.	X	
QQp2	WCA-3 Decomp. & Sheetflow Enhance.		
	BISCAYNE BAY		
FFF	Bis. Bay Coastal Wetlands (FFF&OPE)		
HHH	West Miami-Dade Reuse		
BBB	South Miami-Dade Reuse		
	LOWER EAST COAST		
AAA	LEC Utility Water Conservation	X	X
CC	Broward County Secondary Canal Sys.	X	
	WESTERN BASIN		
CP	Miccosukee Water Mgmt Plan	X	
RR	Flow to NW & Central WCA-3A	X	
CCC	Big Cypress/ L-28 Interceptor Mods		
OPE	Seminole Tribe BC Water Conser. Plan	X	
GG	**LAKE OKEECHOBEE ASR**		1/2 X
	STAND ALONE OPES		
OPE	LO Watershed WQ Treatment Facility	X	
OPE	LO Trib. Sediment Dredging /Ph removal	X	
CP	Lake Istakpoga Regulation Schedule	X	
CP	Southern Golden Gates Hydrologic Rest.	X	
CP	Southern CREW Project	X	
CP	Lake Trafford Restoration	X	
OPE	Lake Worth Lagoon Restoration		X
OPE	Pineland/Hardwood Hammocks	X	
OPE	Melaleuca Erad. Project & Other Exotics		X

ID	COMPONENT NAME	2010	2015*
CP	Florida Keys Tidal Restoration	X	
CP	Henderson Creek/Belle Meade Rest.	X	
CP	Winsburge Farms Wetlands	X	
CP	Lakes Park Restoration	X	
	RECOMMENDED FEASIBILITY STUDIES		
FEAS	SouthWest Florida Feasibility Study	X	
FEAS	Florida Bay Feasibility Study	X	
FEAS	Comp. Integrated Water Quality plan	X	

* 2015 consists of all completed projects in 2010 plus those identified in 2015 column.

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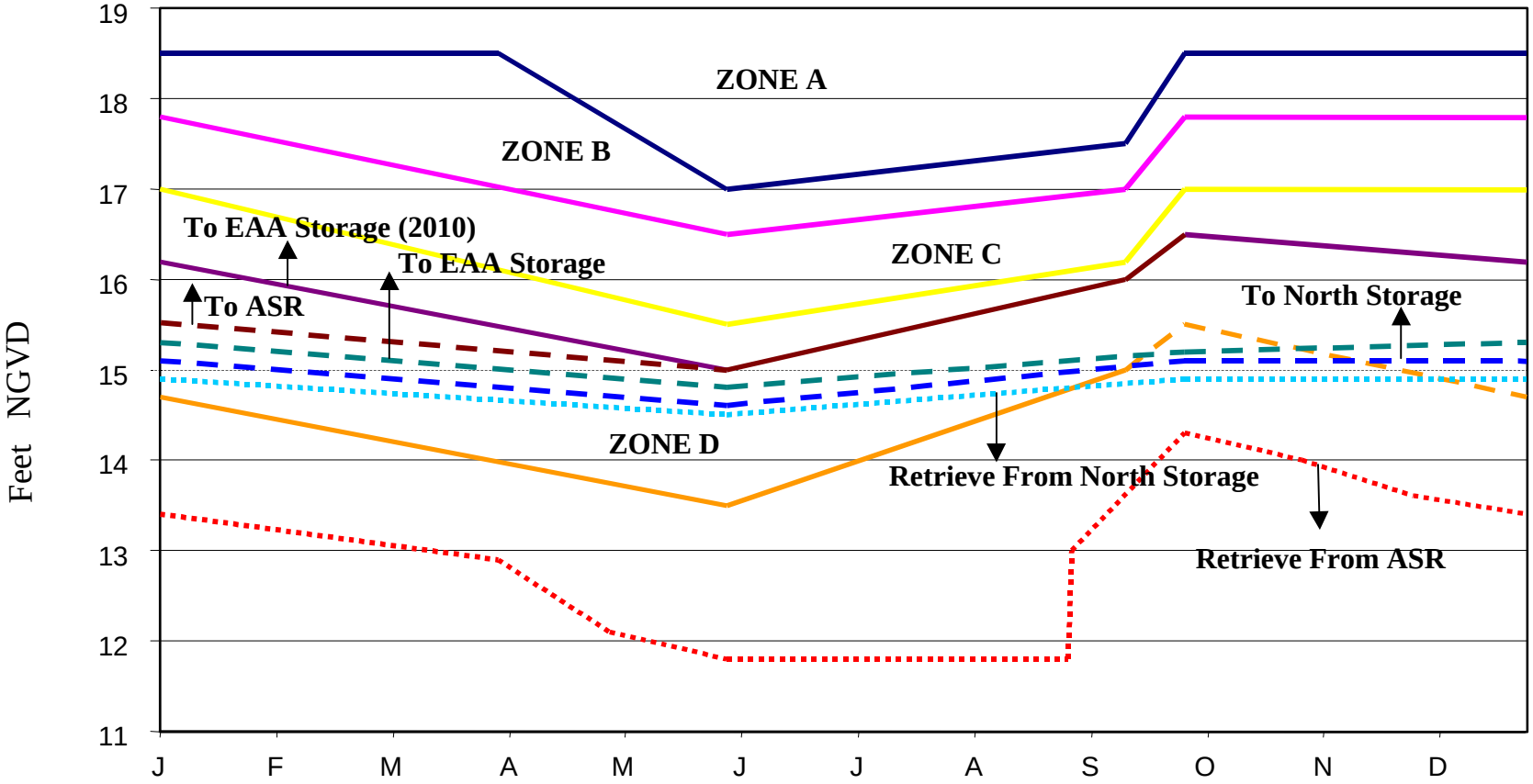
Fig. 1 Lake Okeechobee regulation Schedule used in 2010 and 2015 Case Studies



RELEASE THROUGH OUTLETS AS INDICATED

Zone	Agricultural Canals to WCAs (1)	Caloosahatchee River at S-77 (1 2, 4)	St. Lucie Canal at S-80 (1, 2, 4)
A	Pump Maximum Practicable	Up to Maximum Capacity	Up to Maximum Capacity
B (3)	Maximum Practicable Release	Extremely Wet: Up to 6500 CFS Otherwise: Up to Maximum Pulse Release	Extremely Wet: Up to 3500 CFS Otherwise: Up to Maximum Pulse Release
C (3)	Maximum Practicable Releases	Extremely Wet: Up to 4500 CFS Normal to Wet: Up to Maximum Pulse Release Dry: None	Extremely Wet: Up to 2500 CFS Normal to Wet: Up to Maximum Pulse Release Dry: None
D (3)	As Needed to Minimize Adverse Impacts to the Littoral Zone while not Adversely Impacting the Everglades, (see note 5)	Extremely Wet: Pulse Release Otherwise: None	Extremely Wet: Pulse Release Otherwise: None

Notes:
(1) Subject to first removal of runoff from downstream basins
(2) Guidelines for wet, dry, and normal conditions are based on:
1) selected climatic indices and tropical forecasts and
2) projected inflow conditions
(3) Releases through various outlets may be modified to minimize damages or obtain additional benefits, consultation with Everglades and Estuarine Biologists is encouraged to minimize adverse effects to downstream ecosystems
(4) Pulse release are made to minimize adverse impacts to the estuaries
(5) Only when the WCAs are below their respective schedules